INTRODUCTION

The most visible application of toxicology in society is safety testing for regulatory risk assessment purposes. Unfortunately, this is also the most controversial application of toxicology as these tests require a large number of animals and often cause them pain and distress. While the Canadian public expects the government to protect them from unsafe products, the public supports animal use in science only when mechanisms are in place to minimize pain and distress (OMB, 2010). The Canadian Council on Animal Care (CCAC) acts on behalf of the people of Canada to ensure that the use of animals in research, teaching, and testing involving the employment of physical and psychological pain and suffering is minimized. The CCAC has the responsibility to ensure that all animals used in research are treated humanely, and the extent to which the Symposium recommendations have been implemented in Canada and abroad, in addition to investigating the obstacles and opportunities for further implementation of the Three Rs in this area.

APPLICATION OF THE THREE RS IN TESTING

Below are three examples of applications of the Three Rs in regulatory testing. For each of the Three Rs, the application of the Three Rs in regulatory testing.

1. Replacement: In Vitro Shellfish Toxin Testing

Bivalve molluscs are filter-feeders and readily accumulate toxic compounds which can severely affect the marine environment. Preliminary findings from the research fellowship suggest that one of the major obstacles to implementing the Three Rs in regulatory testing is the lack of available alternative test methods. Where alternative methods do exist, acceptance of these methods by regulatory authorities is often hindered because they do not undergo international validation or are in various stages of this lengthy process.

2. Reduction: In Vitro Potency Testing for Batch Release of Tetanus Vaccine

Because vaccines are derived from virulent microorganisms or toxins, and because they are administered to large sections of the population, it is important that each batch is tested for purity, safety, and potency.

3. Refinement: In Vivo Skin Sensitization Testing

Skin sensitization is a manifestation of chemical allergy. When a sensitizing chemical is applied topically, it may cause a rash, blanching, or itching, or even the formation of blisters on the skin at the site of application.

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References

Please see handout for a complete list of references.